



Helpu Cymru i leihau
ei Hôl Troed Carbon
Help Wales reduce
its Carbon Footprint



Llywodraeth Cymru
Welsh Government

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Energy Wales: A Low Carbon Transition

March 2012



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First Minister's Foreword



Energy is a defining issue for our generation and an issue on which, as a Government, I am determined that Wales will lead.

As a nation, we are rich in energy resources and this provides a tremendous opportunity to fuel our drive for a fairer and more prosperous Wales and to achieve a better quality of life for our own and future generations.

This means harnessing our energy potential in a way that creates a sustainable, low carbon economy for Wales. We face major challenges: climate change and energy security. But these challenges are also a golden opportunity for Wales, particularly in the current economic climate. We are therefore focused on leading the transition to low carbon – to lay the foundations for a better future and maximise the long term benefits to Wales along the way.

I am determined that within our responsibilities we will do all that we can. The actions in *Energy Wales* show how we will act to make it happen – by providing leadership and a stable framework; by maximising the benefits of all energy development and energy efficiency; and by positioning Wales at the forefront of harnessing energy from the sea and the move to smart living.

Business is essential to our energy and our economic future. We therefore aim to build on Wales' reputation – working in partnership with industry – to ensure that we are not only 'open for business', but are once again seen as a global centre for energy.

I will continue to highlight the fact that Wales is disadvantaged by UK energy policy and seek a fairer resolution to the current arrangements. In Wales, the energy market is not working effectively and we need clear long term support for key industries such as marine in Wales that is on a par with the rest of the UK.

In taking the lead on energy, I am determined that we work effectively and use all of Welsh Government's ability to deliver a positive transition to a wealthy, low carbon future. This is a huge opportunity to forge a better future and to once again lead a revolution in history; this is an energy decade for Wales.

A handwritten signature in blue ink, which appears to read 'Carwyn Jones'. The signature is fluid and cursive, written in a professional style.

Rt. Hon Carwyn Jones AM
First Minister of Wales

Report reference column
See Appendix (p27) for
web links

Programme for Government
2011-2016

Economic Renewal: A New
Direction

Economic Renewal Sectors

One Wales: One Planet –
The Sustainable Development
Scheme

Sustaining a Living Wales

Our ambition

Our aim is to enhance the economic, social and environmental wellbeing of the people and communities of Wales – to achieve a better quality of life for our own and future generations.

As set out in the Programme for Government, our ambition is therefore to: ‘create a sustainable, low carbon economy for Wales’.

In doing so, we want to ensure full advantage is taken of the transition to a low carbon economy to secure a wealthier, more resilient and sustainable future for Wales.

In order to realise this ambition, we will work in partnership – with private, public and social sectors – to make this a reality.

Business and industry in particular will play a key role in driving the transition to a low carbon economy and we recognise that we must do all we can to create a stable environment for the necessary long-term investment. We will work to do this by:

- striving to ensure that Wales is an exceptionally good place to conduct business and make long-term capital investments;
- engaging and working closely with, and being responsive to, the needs of business and industry;
- developing the Wales Infrastructure Investment Plan to ensure future infrastructure investment is clearly and strategically prioritised; and,
- ensuring our regulatory processes are as simplified and efficient as possible.

Our commitment to working with business to deliver these aims is a major priority. In addition, in working to make this a reality, we will also seek to ensure that the people and communities of Wales derive benefits over and above decarbonising our energy system. We want a genuinely sustainable approach to transition in line with our commitment to sustainable development as our central organising principle. By working to deliver wider benefits for Wales, we believe this will be good for both the long-term interests of business as well as our communities. Our aims in this respect are threefold.

Firstly, we want to maximise the long-term economic benefits, and in particular the job creation potential, for Wales. In the UK, it is predicted¹ that 250,000 new jobs will be created by 2020 in the energy sector and with its energy resources and significant academic and operational expertise, we believe that Wales has the potential to generate far more than a proportional share of these new jobs.

Secondly, we want to ensure that communities benefit from energy infrastructure developments. Any significant infrastructure developments, whilst important to the transition to a low carbon economy, will impact on communities and their local environments. We believe that ensuring there are clear community benefits from such developments is a critical part of the dialogue and engagement, particularly for those developments which have a large spatial impact.

Finally, we want to carefully plan and manage the relationship between energy development and our natural environment in line with the ambition of ‘Sustaining a Living Wales.’²

¹ www.decc.gov.uk/en/content/cms/legislation/white_papers/emr_wp_2011/tech_update/tech_update.aspx

² www.wales.gov.uk/livingwales

The importance of energy

Our energy system underpins our entire way of life. That system is now undergoing profound change as we adapt it to meet a range of environmental, economic and social objectives. These changes mean that we expect our energy system to:

- become increasingly decarbonised – the European Council reconfirmed in February 2011 the European Union’s objective of reducing greenhouse gas emissions by 80-95 % by 2050 compared to 1990, with a consequent impact on increasing low carbon electricity generation;
- meet other environmental standards such as those for pollutants and waste;
- provide energy security and resilience; and
- deliver, through energy markets, affordability and a credible framework for long term investment.

We are therefore undertaking a whole system transition to low carbon energy – covering electricity, heating and transport – which amounts to a revolution in the way we meet and manage our energy needs. These changes are already happening and whilst energy policy is not a devolved matter, a large number of key enabling policies are – including economic development, housing, planning, environmental regulation, pollution and transport. There is therefore much that we can do to take control of the opportunities associated with the transition to a low carbon economy. We must ensure that we are pro-active in our approach to maximising the long term benefits to Wales from the transition as well as seeking to positively influence what is outside our control.

Those countries that are at the vanguard of the transition to a low carbon economy will be in a position to exploit significant wealth generation opportunities globally as well as internally. We therefore want to ensure that Wales is in the best possible position to not only create new jobs and supply chain opportunities, but to take advantage of the potential to export energy, expertise, goods and services to other nations seeking to make the transition to a low carbon economy.

In short, we believe that the opportunities for Wales from a successful transition to a low carbon economy are substantial. This is why energy, and our action on it, is so important.

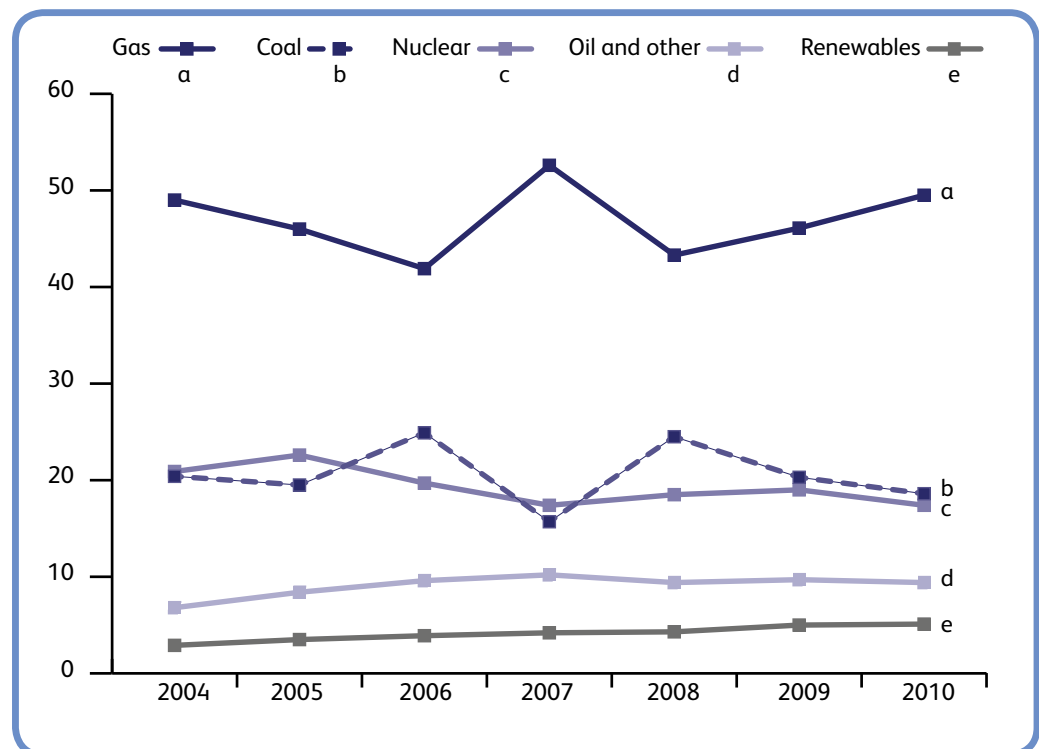
Where we are now

In terms of electricity generation, Wales was responsible for 9% of generation in the UK³ between 2004 and 2010. Total electricity generation in Wales has fallen 10% over this period driven, largely by a fall in generation from coal and nuclear plants.

Figure 1 highlights the percentage breakdown of electricity generation in Wales by fuel type which highlights that:

- Gas continues to remain the dominant source, responsible for almost 50% of all electricity generated in Wales.
- Coal and nuclear have gradually decreased as particular generating plants come off-line.
- The proportion of electricity generated from low carbon sources, including nuclear, has remained steady at around a fifth of total generation.
- Growth in renewable generation, from 2.9% in 2004 to 5.1% in 2010, has to some extent negated the fall in electricity generated from nuclear over the same period.

Figure 1: Percentage of electricity generated in Wales by fuel type



Source: UK Department of Energy and Climate Change

This period has also seen significant investment from the Welsh Government to address domestic energy efficiency in low income communities and households. In 2010-2011 alone, we invested over £50m into phase 1 of our strategic energy performance investment programme *arbed* and the demand-led Home Energy Efficiency Scheme. Together with match-funding, this equated to a total investment of over £80m in Wales.

Wales has significant assets in virtually every energy source – we have significant wind resources, both onshore and offshore; significant wave and tidal energy potential; one of the best solar resources in the UK; scope for more biomass and hydro; and existing nuclear sites and expertise in the nuclear industry. We also possess the key infrastructure to make the most of the energy opportunity in terms of our roads, railways, deep ports and electrical and gas grids.

We believe that Wales is well placed to take advantage of the transition to a low carbon economy. This is further demonstrated by the fact that there is already significant human capital in the low carbon sector in Wales. The renewable sector⁴ supported around 13,000 jobs in Wales and the low carbon sector⁵ around 16,000 jobs in 2009/10⁶. Alongside this, Wales has considerable relevant expertise within the Higher Education sector and has established a significant economy in the renewable and low carbon sectors – the renewable and low carbon sectors being responsible for £1.8 billion and £2 billion in sales respectively in 2009/2010.⁷

We now need to build on this foundation and significantly accelerate the pace of change, ensuring that Wales is well-placed to work with businesses and industry, in order to take advantage of the opportunities associated with the transition to a low carbon economy.

⁴ Defined as including biomass, geothermal, hydro, Photovoltaic, renewable energy consultancy, wave and tidal and wind)

⁵ Defined as Additional energy sources, alternative fuel/vehicles, alternative fuels, building technologies, carbon capture and storage, carbon finance and nuclear power

⁶ www.bis.gov.uk/policies/business-sectors/low-carbon-business-opportunities/market-intelligence/market-data

⁷ www.bis.gov.uk/policies/business-sectors/low-carbon-business-opportunities/market-intelligence/market-data

The transition to Low Carbon

This transition to a low carbon energy system is already underway, but in looking forward for Wales it is likely to be characterised by a number of key elements.

Redesigned energy markets are needed to ensure that the most efficient technology choices and optimum investments are made in transitioning to a low carbon economy. This work is currently underway, being led by the UK Government through the Electricity Market Reform.

The pursuit of ever greater energy efficiency will be vital. This provides significant social and environmental advantages – essential to tackling fuel poverty and ensuring long term affordability – as well as substantial economic opportunity for Wales. It will therefore be a constant theme through the whole transition process.

We will see the widespread deployment of a diverse range of low carbon technologies which will help to generate low carbon electricity, bringing about a steady decarbonisation of energy supply. Some of these technologies, such as wind, solar, nuclear and biomass are mature and currently being developed and deployed. Others, such as wave and tidal, are at an earlier stage but with the potential to contribute significantly over the medium to longer term.

Gas will be a key transitional fuel because greenhouse gas emissions from gas are significantly less than coal subject to the method of extraction. Gas is a flexible, responsive and reliable source of energy which can play a key role in the transition to a genuinely low carbon energy system.

Whilst the rise of gas is essential in a low carbon transition, it cannot be a long term basis for the energy economy of Wales without carbon capture and storage. Carbon capture and storage therefore, if successfully commercialised and supported by the appropriate regulatory framework, will be a vital component of our medium to long term energy future.

Greater electrification of overall energy consumption will also occur as electricity becomes more widely used in transport and heating. We envisage the gradual introduction of renewable bio-methane into gas supply, much greater end-use and conversion efficiency in space and water heating reducing overall demand, and a rise in the use of electrical heating through efficient heat-pumps as an increasingly competitive alternative to gas grid extension.

In the short term, gas, nuclear and bio-energy will provide the energy to compensate for the intermittency in supply from renewable resources. In the medium to long term, the development of energy storage technologies and a next-generation 'smart grid' will provide further scope for managing the intermittency and balancing supply and demand more effectively.

The Welsh Government will be involved, to varying degrees, in the development of these elements as we transition to a low carbon economy. We believe that we have a key role in helping to facilitate a transition that is as efficient as possible, and in ensuring that we realise the significant opportunities for Wales.

How we will make a difference

Within our overall aim of achieving a low carbon economy and our ambition to ensure that in transition we deliver economic benefits and jobs, ensure real community benefits and manage the interface with our natural environment as set out above, we will:

- Engage and support businesses that help us to achieve our low carbon ambition – ensuring that Wales is the best possible place to do business by being responsive to the needs of businesses and industry as a cornerstone of our approach.
- Strive to ensure that our regulatory processes are as simplified and efficient as they can be and provide businesses with clarity and stability.
- Engage the UK Government to ensure that there is a credible framework for capital investment to support the transition to a low carbon economy, that the market mechanisms proposed by the Electricity Market Reform are implemented with greater clarity and speed and that they address current inequalities.
- Support our vital energy intensive industries in the transition to a low carbon economy, engaging the UK Government to ensure that during transition there is clarity on and mitigation for the exposure of energy intensive industries to policy costs that could otherwise drive them out of business or overseas.
- Relentlessly pursue energy efficiency so that we do more with less – energy efficiency is cost effective in terms of carbon savings, the most effective way to reduce energy bills and able to boost expenditure in local economies as a result of a high labour-market multiplier.
- Focus on low carbon sources of energy generation and approaches which will help to deliver lower overall emissions.
- Assist the most vulnerable in Welsh society and work to ensure that costs of reform do not fall disproportionately on poor households.
- Make the most sustainable use of Wales' resources by taking forward the work in our Green Paper *Sustaining a Living Wales* and our resource efficiency strategy *Towards Zero Waste*.

In carrying out the commitments above, we also recognise the need to be clear about what it is that we will do and what we expect from others.

The Welsh Government is committed to doing all that we can to ensure that our action on energy both supports Wales' successful transition to a low carbon economy and maximises the opportunity to generate long term wealth. We will do this by focusing and prioritising our own effort in three key areas, to:

- Provide leadership to ensure Wales has a clear and consistent framework for investors, regulators and decision-makers together with the infrastructure, coordination and stability to ensure Wales is a great place to do business.
- Maximise benefit for Wales in terms of jobs and wider economic benefit at every stage of development whilst also ensuring our communities derive long term benefits.
- Act now for Wales' long term energy future through support for innovation, research, development and commercialisation in the areas that offer the greatest potential for long-term benefit for Wales.

Economic Renewal – Sectors

National Energy Efficiency and Savings Plan

Fuel Poverty Strategy

Towards Zero Waste: The Overarching Waste Strategy for Wales

Provide leadership on energy in Wales

We are determined to lead the energy agenda in Wales. We will do so pro-actively, and in partnership. We are committed to working with partners to build capacity to achieve our shared goals, and to taking action to improve what we are responsible for. We will set out our vision – clearly and consistently – and use our influence to improve areas outside our responsibility.

We recognise the importance of a coherent vision and framework for investors and communities. We also recognise we have a key role to play in improving the planning and consenting regime, and putting in place a 21st Century energy infrastructure. In developing a *Wales Infrastructure Investment Plan*, we will set out how we ensure our investments are strategically prioritised. We will drive better value from the money we are investing, lever more funding into public sector infrastructure investment to boost jobs and growth and make best use of our assets. Through engagement in this process we will ensure that future energy investment is aligned with our wider government priorities and maximises collaborative opportunities.

Improving the planning and consenting regime

Where we are now

We recognise that a clear, streamlined, consistent, transparent and accountable planning and consenting regime (including ancillary consents) is fundamental if we are to achieve our energy ambitions and unlock Wales' energy potential.

However, the existing planning and consenting regimes for major energy development have been subject to criticism from industry in particular. This is exacerbated by the fact that, although planning is devolved, responsibility for large-scale energy development (above 50MW onshore and 1MW offshore) as well as the electricity transmission network – the grid – that connects them lies not with Wales but the UK Government.

Where we want to be

We are determined to ensure that the aspects of the regime that are within our responsibility – the Welsh Government's and that of the proposed Single Environment Body, which we are currently consulting on – are as lean and efficient as possible and we will work in partnership to achieve this. We have already taken steps to improve matters in the planning system but will go further by reviewing all the consenting processes associated with energy.

We believe the Welsh Government is best placed to align Wales' energy aspirations with the needs of our communities, and to manage the interface with our natural environment. We already have the responsibility for some key policy areas to do this – such as economic development, transport, pollution and planning – and we will continue to make the case to be granted greater responsibility for planning consents on major energy development.

Planning Policy Wales

Technical Advice Note 8:
Planning for Renewable
Energy

Review of Planning and
Consenting Process

Practice Guidance: Planning
for Renewable and Low
Carbon Energy – A Toolkit for
Planners

Consultation on a Single
Environmental Body – Natural
Resources Wales

A Living Wales – Consultation
on Sustaining a Living Wales

Key things we will do in this Government term

- Make further improvements to the planning system and review other consenting regimes associated with energy developments to simplify processes by April 2013 to coincide with the proposed date of the establishment of Wales' new Single Environment Body.
- Ensure Wales' statutory agencies continue to improve their provision of advice to applicants prior to their submission of applications to consenting bodies and frame their advice constructively, to identify timely, consistent and constructive solutions.
- Implement recommendations from the Hyder report commissioned by the Welsh Government to review current energy consenting systems – this is expected to report in the summer and any necessary legislative changes will be fed into the Planning White Paper and subsequent Planning Bill.
- Help businesses navigate planning and consenting processes and ensure that information held by the Welsh Government and its agencies is readily accessible, to enable developers to more quickly produce proposals of the highest quality.
- Continue to press for greater devolution of energy consenting powers, including as part of the Welsh Government's input into the Silk Commission, and set out how we will use the powers to put in place a single, streamlined and transparent process for Wales.

Review of Planning and Consenting Process

Silk Commission – Statement by the First Minister for Wales

Putting in place a 21st Century energy infrastructure

Where we are now

We are committed to doing all we can to ensure Wales' energy infrastructure is robust, as it is fundamental to unlocking Wales' energy potential.

Investment in energy infrastructure creates jobs, and stimulates and enables wider economic development.

Wales has major infrastructure assets. Our electricity transmission network – the grid – traverses well-established corridors to the north and south of Wales. Our deep sea ports provide access to the energy in our seas. Our gas infrastructure – notably the two LNG terminals at Milford Haven – is an important source of stability during the transition to a low carbon economy. These are all major assets. They make Wales an attractive location for investment and development in energy.

But if our energy ambitions are to be achieved – unlocking our renewable energy and radically increasing the amount of low carbon and distributed energy in our system – our energy infrastructure requires investment, reinforcement and upgrading.

Economic impact of low carbon energy on Welsh ports

Where we want to be

We expect our energy infrastructure to match our ambitions. We are already working closely with the private sector – the National Grid, our Distribution Network Operators and others – to secure the investment required. We will continue to engage the UK Government and the UK regulator Ofgem at the highest levels to ensure energy developments in Wales are supported, not delayed, by improvements to our grid.

We will continue to set out – clearly and consistently – our expectations: a grid and distribution network that enables us to make the most of our on- and off-shore natural resources; a grid with the capacity to transmit the low carbon energy we generate, thereby meeting the needs of Welsh households and businesses and creating export wealth; and an increasingly ‘smart grid’ which integrates distributed and intermittent energy sources with emerging storage technologies, and underpins Wales’ smart living goals.

We believe the development of the grid in Wales can and should be carried out in a way that is sensitive to its impact on our natural environment. We expect Wales – especially the communities most affected by energy infrastructure development – to gain real benefit from such projects. In all this, the Welsh Government is committed to playing as full a role as we can.

Key things we will do in this Government term

- Work with business to identify the strategic developments in the grid required in Wales – and work closely with the private sector to help ensure its investment in Wales’ grid matches our energy ambitions and delivers economic and community benefit whilst minimising the impact on Wales’ natural environment.
- Align the ongoing and future investment into Wales’ grid with Wales’ long term strategic infrastructure plans through our developing Wales Infrastructure Investment Plan in which the energy sector is a key component.
- Coordinate our approach to areas where clusters of opportunity and challenge require a joined-up approach to energy and transport infrastructure.
- Continue to map active gas connections in Wales and encourage energy companies to extend the gas network where viable, especially in areas with high concentrations of fuel poverty.
- Continue to support the development of our deep-sea ports in Milford Haven and Port Talbot, as well as strategically important ports like Mostyn, Holyhead and Swansea.

Coordinating and prioritising delivery through an energy programme

Where we are now

To realise the energy opportunity that Wales has, we recognise that there is more that must be done. Although energy policy for Wales is the responsibility of the UK Government, it is vital for all the enabling policy areas that are in the Welsh Government’s responsibility to join up in order to make the most of the opportunity and deliver our low carbon aim.

We recognise how important it is to provide clarity to investors and communities on how we will make the transition to our low carbon future. We also recognise the need to ensure our energy ambition is supported and prioritised within our policies, that our activity is aligned and that the areas in which we will invest most time and effort are clearly identified.

Where we want to be

We want to make our low carbon aims a reality and are committed to making sure that within our areas of our responsibility we are consistent, strategic and clearly prioritising. It is essential that investors and communities understand how our plans add up, how we are prioritising and sequencing activities and what can be expected from the Welsh Government and our partners.

We are determined to demonstrate – clearly and transparently – a genuinely joined-up, cross-Government approach to energy policy and delivery, and to securing the economic, social and environmental benefits that it can bring. The energy programme is the key vehicle through which we will make this a reality.

Key things we will do in this Government term

The energy programme has been established in parallel with the development of this document. The programme will be overseen by the First Minister to ensure it has highest priority within government, and it will prioritise, plan and coordinate our energy agenda. Our focus is on leadership and delivering in partnership. We are determined to take advantage of our energy potential to generate sustainable wealth for Wales and maximise sustainable benefits. We will work closely with business and stakeholders to make sure this happens.

The programme will:

- Coordinate delivery against our energy priorities – initially those set out in this document – and strategically plan to ensure our support is timely and focussed.
- Build on existing stakeholder groups to capture advice from a wide range of perspectives from business, academia, education providers, communities and others.
- Market Wales' energy offer to secure more investment for Wales.
- Proactively target and secure funding from a number of different sources – for example, through the new guidelines for the European Regional Development Fund as well as rural development funding and the seventh framework programme (FP7) that offer a significant opportunity to target funding at supporting our low carbon aims.
- Seek to reinvest benefits realised from energy projects to support further improvements in infrastructure, to maximise economic and community benefit, and progress innovative technology to commercialisation in Wales.
- Continue the focused, First Minister led engagement that has already been initiated with industry as well as linking with the Energy and Environment and other key Welsh Government sector panels.
- Actively and clearly communicate the Welsh Government's aims for energy in Wales, including the wider energy context and the evidence base for our objectives - making sure that all relevant parties work together to resolve any issues that arise to ensure delivery against the outcomes we are seeking.

Maximise the benefit energy can deliver for Wales

Wales is and should be a place where investors want to invest. We are committed to ensuring that Wales is not only open for business but viewed as a business-friendly nation.

It is our aim to ensure that Wales is at the forefront of the low carbon energy agenda, and the transition to a low carbon, low-waste and hi-tech economy. We are prepared to do all we can to ensure that Wales is recognised – globally – as an attractive location for energy investment.

But our clear focus is on energy for Wales. Our responsibility is to Wales. We are acting on energy to ensure that Wales – notwithstanding global pressures and the energy powers that rest with UK Government – shapes its energy future to the long term benefit of our businesses and our communities.

Our aim is to unlock and harness Wales' energy resources in order to maximise economic, social and environmental benefits for the people of Wales. We believe that our action on energy can and will generate wealth and deliver jobs and investment. We will seek to work in partnership with business to ensure this happens.

Ensuring Wales benefits economically from energy developments

Where we are now

In *A Low Carbon Revolution* we established the potential for some £50 billion of investments in low carbon electricity projects in Wales by 2025. We want every pound of investment to contribute to Wales' economy and long term wealth – an aim which is especially important in the current economic climate.

Where we want to be

It is vital that business delivers on the promise of jobs from investment into energy in Wales. It is also essential that Welsh companies are actively involved in delivering energy developments and encouraged and supported to take advantage of the procurement processes associated with them. We must build a competitive Welsh energy supply-chain that can help unlock our own energy resources and export energy-related expertise, goods and services to the rest of the UK and globally. In parallel, we will build on our successful pilot in North Wales, which supported new apprenticeship training in the operations and maintenance of onshore wind turbines, to develop the necessary skills within our workforce to meet the needs of the industry.

We will continue to pursue energy efficiency – relentlessly – to help our businesses maintain their competitiveness and because, from manufacturing to installation, Wales has a comprehensive supply-chain that ensures the economic benefits of investment in energy efficiency are locked into Wales.

We aim to ensure that energy efficiency and electricity generation support jobs across the supply chain over the lifetime of developments – from manufacturing to installation, construction through operation to decommissioning. This is why we must further strengthen our partnership working with business and investors, to ensure that energy developments succeed commercially and sustain the Welsh economy.

Key things we will do in this Government term

- Ensure every major energy development maximises economic benefits for Wales through targeted interventions into supply-chain development, business support, skills and training, procurement, innovation, research and development (R&D).
- Provide focused support for Welsh businesses and research institutes wanting to undertake energy-related innovation and R&D with commercial potential.
- Target the business support we offer to help develop competitive Welsh supply-chains – in energy sectors of greatest potential and, in the context of specific energy developments underway or expected in Wales – supporting and encouraging Welsh companies to engage in the procurement process.
- Ensure energy-related procurement exercises are designed to stimulate demand for local labour, products and services and enable Welsh businesses to compete fairly and effectively.
- Extract maximum long-term value to the Welsh economy by developing our future workforce to meet industry needs – this will include working to promote the importance of Science, Technology, Engineering and Mathematics (STEM) disciplines within schools, ensuring the right career development exists for those moving to higher level professional skills, supporting businesses and individuals to access high-quality apprenticeship training and, working with growing businesses to access our Skills Growth Wales and Jobs Growth Wales programmes.

Keeping it local: maximising the Welsh Pound

SME friendly procurement: The Can Do Toolkit 2

For Our Future: The 21st Century Higher Education Strategy and Plan for Wales

The National Science Academy

Skills Growth Wales

Jobs Growth Wales

Ensuring Wales' communities benefit from energy developments

Where we are now

If our transition to a low carbon future is to be successful we must ensure that our communities are fully engaged and that they receive long-term positive benefits. Energy presents a significant opportunity to bring wealth and long term benefit to urban and rural areas, thus safeguarding the long term viability of our communities.

Not only do energy developments offer our businesses and workers significant opportunities, they also offer the opportunity to secure investment into our communities. But this requires more focus on community engagement and clearly making the case for development in the context of the potential for economic development as well as climate change, security of supply and energy price issues.

In England, business has published details of the renewable energy sector's protocol on community benefits which includes funding pots related to wind development. The protocol specifies, for instance, a minimum £1,000 payment a year for every MW of installed wind power for the lifetime of a wind farm. This is a welcome start, but we believe that community benefits can and should go much wider in Wales.

Where we want to be

We expect Wales' energy developments to focus strongly on community engagement and ensure that benefits and impacts are clearly and objectively understood.

We want Wales' energy projects to provide opportunities for all parties. We want to ensure that developers are clear about what we expect from them and that the return on investment benefits both the businesses in question and Wales' communities. We expect benefits for Wales' communities to include jobs and economic benefits in every viable instance.

Key things we will do in this Government term

- Work in partnership with business to agree an approach to energy development in Wales that sets out expectations for economic and community benefits.
- Work with communities and partners to ensure that the wealth generated by energy development in Wales benefits communities and lays foundations for Wales' long term economic prosperity – we expect these benefits to include re-investment into energy infrastructure, generation and efficiency.
- Exemplify this approach with energy developments on the Welsh Government's Woodland Estate that build on existing good practice.
- Ensure Wales' communities have access to advice, expertise and funding to cooperatively harness appropriate proven renewable technology, such as hydro, solar, wind and biomass, for local electricity generation - through schemes such as Wales' European Regional Development Fund supported Ynni'r Fro programme.
- Create a mechanism to report – transparently – the level and nature of benefits associated with energy developments in Wales.

Focusing on energy projects of greatest potential benefit

It is vital in the current economic climate that we prioritise our efforts and focus most strongly on the energy projects that offer greatest benefit to Wales.

In each instance, we will adopt an integrated, cross-Government approach that is focused on delivery and partnership. We are determined to ensure that, through our leadership, the benefits of delivering these energy developments are maximised in Wales.

Our award-winning arbed programme and our support to the Anglesey Energy Island programme demonstrate this approach. We are committed to engaging with all energy projects of greatest potential benefit in all key sectors – wind, marine, solar, biomass, nuclear, hydro and others as they arise – in the same pro-active, joined-up way.

Delivering renewable energy

Where we are now

Supporting around 13,000 jobs in Wales in 2009/10,⁸ the renewable sector⁹ has increased considerably with renewable generation increasing by 58 % between 2004 and 2010. For example, biomass contributed £279 million and solar £338 million in sales in 2009/2010.¹⁰

In Wales, 62 % of renewable generation stems from sources such as wind and solar with a further 25 % coming from thermal renewable generation and 13 % from hydro generation. Current operational wind farms have a capacity of 562MW. Significant developments such as Gwynt y Môr, due to come on stream next year, will see capacity increase by 576MW from offshore, with a further 263MW from onshore developments.

Where we want to be

Making the best use of commercially proven renewable energy sources – such as onshore and offshore wind, solar, bio-energy and hydro – we want to facilitate appropriate deployment to deliver against our low carbon objectives, contribute to wider UK and EU aims and realise the significant wealth-generating opportunities Wales has.

We want to ensure that following best practice engagement of our communities, the appropriate technology is deployed at the appropriate sites in a way that delivers for business, benefits communities and supports the long term prosperity of Wales. In so doing we expect to achieve an energy mix across energy sectors and different scales – with greater contributions from micro and community scale developments alongside developments at a larger scale.

Key things we will do in this Government term

- Improve the planning and consenting regime.
- Ensure that the infrastructure necessary for a diverse portfolio of renewable energy is strategically planned and delivered.
- Provide targeted support to Welsh businesses, particularly SMEs, to enable them to compete for and take part in the delivery of renewable energy.
- Act to ensure that communities benefit from renewable energy development and strive to be exemplars through initiatives like the development of hydro on the Welsh Government's woodland estate.
- Integrate government activity through the energy programme – coordinating our actions and working tirelessly to facilitate a resolution to any issues that arise.

⁸ Department for Business Innovation and Skills, 'Low-carbon business opportunities – market intelligence.'

⁹ The renewable sector is here defined as including biomass, geothermal, hydro, solar photovoltaic, renewable energy consultancy, wave, tidal and wind.

¹⁰ Department for Business Innovation and Skills, 'Low-carbon business opportunities – market intelligence'

Energy efficiency

Where we are now

Improving the energy performance of buildings and processes and driving energy efficiency offers significant direct and indirect social, economic and environmental benefits. For householders and businesses, using energy more efficiently can save money which helps tackle fuel poverty and keeps businesses profitable.

Undertaking energy efficiency improvements also has huge potential to stimulate business and job opportunities. Installing energy efficiency measures has one of the highest coefficients of employment to spend of any sector. Our research suggests that an average of 24 person years of employment (PYE) are generated for every £1m capital spend on domestic energy efficiency retrofit. This compares to around 15 PYE for major infrastructure projects, according to HM Treasury guidance on estimating employment impacts for planned capital expenditure. And as energy efficiency measures continue to drop in price, the sector's labour intensity increases.

Wales is rare in having a comprehensive energy efficiency supply-chain, from manufacturing to installation, within its boundaries. Insulation measures and micro-generation technologies are made in Wales by businesses including Rockwool, Knauf, Kingspan, and Sharp. And we have a strong installer base that we have helped to grow. Over 80% of the businesses that delivered phase 1 of the *arbed* programme operate primarily, or solely, in Wales.

Where we want to be

We are determined to embed energy efficiency into all our activities, and continue to take a progressive, joined-up approach to investment through our specially-created domestic energy performance programmes, *arbed* and Nest.

We will continue to work in partnership with business, councils, social housing providers and communities. We will also continue to make sure people are alerted to the vitally important steps that they can take as individuals to conserve energy.

Key things we will do in this Government term

- Put in place revised arrangements for advice and support on energy and wider resource efficiency for businesses and households.
- Invest up to £45m, including over £33m from the European Regional Development Fund, in phase 2 of *arbed* over the next three years and up to £100m in our Nest fuel poverty scheme over the next five years from 2011/12.
- Work with the UK Government to ensure that Energy Company Obligation (ECO) funding can be used alongside investment from our flagship programmes *arbed* and Nest. DECC estimates that the ECO will result in investment of £1.3 billion to 2015.¹¹ This will ensure that proven energy technologies are available to all, regardless of financial resources.

Arbed – Strategic energy performance investment programme

Nest

¹¹ Department of Energy and Climate Change, 'The Green Deal and Energy Company Obligation – consultation document', <http://www.decc.gov.uk/media/viewfile.ashx?filetype=4&filepath=11/consultation/green-deal/3607-green-deal-energy-company-ob-cons.pdf&minwidth=true>

- Building on the success of our micro-generation support scheme, we will provide targeted support to Welsh businesses, particularly SMEs, to help our businesses become Green Deal accredited and broker supply-chain opportunities with Green Deal providers.
- Build on the success of our Delivering Low Carbon Skills Project in prioritising the up-skilling needs of industry to take advantage of new business opportunities associated with energy efficiency investments – this will include taking a structured approach to working with training providers in Wales to develop the necessary capacity to deliver the new skills needed by industry, as well as linking with business-led investments such as the SSE Smart Energy Centre and the British Gas Green Skills Academy, to establish Wales as an innovator for developing and exporting skills across the UK.
- Widen access to job opportunities and apprenticeship training, through our *Pathways to Apprenticeships* and *Jobs Growth Wales* programmes, adding to the engagement made to date with businesses to design a specific pathway into apprenticeship training for the insulation and energy efficiency market.

Skills That Work for Wales

Programme for Government
2011-2016

Anglesey Energy Island

Where we are now

The energy developments in the Anglesey Energy Island Programme have demonstrated how major projects can be coordinated and act as a catalyst for wider energy development. The designation as an Enterprise Zone will further support the realisation of wider economic benefit to the region through the overarching Enterprise Island framework. The programme shows how the Welsh Government and the wider public sector can work effectively in partnership with businesses and communities to help realise benefits.

The development of the Horizon nuclear new build (Wylfa B) is a vital component of not just the Anglesey Energy Island programme but of our wider energy future in providing a constant energy source to complement the intermittency of renewable sources. There are undoubtedly risks associated with nuclear power but the risks posed by climate change are now so serious that we cannot dispense with a key proven low-carbon technology.

The Welsh Government supports the development of a new nuclear power station on Anglesey. This development also offers significant long-term economic benefits to Anglesey and North Wales in general with the potential to contribute £2.34 billion to the economy over the period to 2025. Horizon estimates 5,000 construction jobs at peak and around 800 direct jobs in operation over its lifespan.¹²

Wylfa B is one of a number of major energy developments within the programme that also includes a 299MW biomass power plant at the former Anglesey Aluminium smelting site in Holyhead and a 4.5GW offshore wind zone. This further enhances Energy Island's impressive energy portfolio.

¹² Horizon Nuclear Power, 'Wylfa – community consultation background document December 2011'.

Where we want to be

We are committed to working in partnership to maximise the benefits of the Anglesey Energy Island programme within the Enterprise Island Framework. There is an exciting cluster of challenges to be addressed and opportunities to be taken, covering nuclear decommissioning and the nuclear new-build, offshore wind development, biomass development, energy efficiency activity and infrastructure enhancements associated with the energy development.

Key things we will do in this Government term

- Identify and provide targeted support to businesses in Wales, particularly SMEs, to ensure they are best placed to compete for contracts in the supply-chain for the Horizon nuclear new build and other Anglesey Energy Island developments.
- Develop our workforce by working with local and national partners such as Bangor University and Coleg Menai through their new Construction and Energy centres to promote and support the development of the full range of skills required to ensure that we take the maximum advantage of research and development, energy production, operation and maintenance opportunities – this includes facilitating the transfer of skills from the existing nuclear power station and the Trawsfynydd site to contribute to job security.
- Work with delivery partners to develop the strategic and community level infrastructure to facilitate the Energy Island Programme opportunities and secure lasting community benefits.

Severn Tidal Power

We strongly believe the Severn Estuary represents a strategically important source of renewable energy. We recognise the significant challenges associated with the harnessing of this energy – environmental and financial. But if these issues can be satisfactorily resolved, harnessing the energy will have our strong support. The Welsh Government led the way in funding studies of innovative technologies as part of the UK study of the Severn and we believe that these open up the prospect of exploiting this major energy resource sustainably.

The economic benefits of a Severn Barrage are likely to be substantial. The investment will result in significant job creation during the construction and operation phases. The scale of the development offers Wales the potential to benefit from manufacturing and innovation opportunities, and we will work closely with potential developers who are capable of financing the project privately to secure the project, meet environmental concerns and realise the economic benefits. We are determined to do everything we can to ensure that Wales receives maximum benefit from the development, should it go ahead, to support our ambition to be a world-leader in the marine energy market.

Act now for Wales' long term energy future

As well as taking advantage of opportunities in the here and now to transition to low carbon and create long term wealth we must also prioritise action for our longer term future. Fundamental to this is positioning Wales at the forefront of key innovation, research and development on the low carbon technologies that will power our future. 'Low Carbon, Energy and Environment' is identified as one of the three 'Grand Challenges' in our national science strategy, *Science for Wales*. This reflects the academic excellence in Wales allied to our high calibre businesses and complements our aim to support our businesses and academics to collaborate to take advantage of commercial opportunities.

The Welsh Government is committed to innovation and Wales has a strong innovation base. For example, we have invested £19m into Wales' £34m Low Carbon Research Institute (LCRI) – one of 'the best examples in Europe of research, innovation and sustainable development' according to the President of the European Commission, J M Barroso. We have also invested £12.6m into the £23.6m Sustainable Expansion of the Applied Coastal and Marine Sectors (SEACAMS) initiative. But we must do more if Wales is to be an effective laboratory for low carbon energy, by creating the right conditions – a dynamic research environment, stable business conditions and an enabling infrastructure. We must work collaboratively with business, the research community and all levels of government. And we must take our communities with us.

By focusing our efforts on areas of projected growth and competitive advantage, we will ensure Wales benefits from its own energy potential. We will also ensure that, in unlocking our own energy potential, we strengthen Wales' resilience and develop clusters of knowledge, goods and services that can be exported to the rest of the world. This will create the basis for our future economic prosperity.

Economic Renewal – Sectors

Low Carbon Research Institute

SEACAMS

Unlocking the energy in our seas

Where we are now

Wales has 1200km of coastline, strategically located deep sea ports, accessible grid infrastructure, a manufacturing base, up to 6.2GW (over 10GW including the Severn Estuary) of estimated generating capacity and a resource that is ideally suited to the current phase of the industry.

We have already invested £1m through the Marine Renewable Energy Strategic Framework to understand our resource, and are currently working with Halcrow to identify the infrastructure requirements of the industry. In addition, we are working with The Crown Estate to open the seas around Wales that have promising potential for moving towards commercial deployment of marine renewable energy devices.

Marine Renewable Energy
Strategic Framework

We are supporting the work of Marine Energy Pembrokeshire, a partnership between academia, the public and private sector working in collaboration to establish Pembrokeshire as a 'centre of excellence' for sustainable marine electricity generation.

Tidal Energy Ltd will be deploying their 1.2MW full-scale tidal energy demonstrator in Ramsey Sound, Pembrokeshire, in 2013. This fully consented £12m project received £6.94m from the Welsh Government via the EU Convergence Fund Programme towards early feasibility studies and the manufacture and installation of the device.

Marine Current Turbines have submitted an application to DECC and the Welsh Government for a 10MW pre-commercial tidal array in the Skerries, Anglesey. This £70m project has secured a seabed lease from The Crown Estate and, if fully consented, has a target installation date of 2014.

Where we want to be

We are strongly committed to unlocking the energy in our seas. We have significant expertise across government, industry and academia and we will bring that expertise together to focus on the delivery of marine energy. We believe that Wales has the potential to be a world-leader in the marine energy market – as a significant generator and, just as importantly, as an exporter of marine energy knowledge, technologies and services.

Key things we will do in this Government term

- Lead the drive to develop a competitive marine energy sector in Wales by stimulating collaboration between business, academia and the public sector – working with local delivery groups such as Marine Energy Pembrokeshire – and ensuring Wales' energy infrastructure is responsive to the marine sector's needs.
- Complete our marine energy infrastructure project in order to identify strategic sites for wave and tidal stream developments and the wider actions that will be needed to support them.
- Work with The Crown Estate and industry to bring forward a marine energy leasing round for Welsh waters as soon as possible.
- Continue to support institutions like the LCRI and SEACAMS to develop world class academic expertise and innovative technologies to meet the growing global demand for marine renewables.
- Provide robust and timely information and guidance to the emerging marine renewable energy sector on the nature of the opportunities in Welsh waters.
- Work with partners to promote Wales as a centre for marine renewables.
- Investigate mechanisms for advancing the deployment of marine energy arrays.
- Gear up training providers to ensure capacity exists to deliver a future workforce with the necessary skills required to support the commercial deployment of marine energy investments.
- Continue to press the UK Government hard for both a fair resolution to the current situation that sees Wales lose out under the Renewables Obligation in comparison with other parts of the UK and, a longer term solution under the Electricity Market Reform (EMR) that provides a more equitable and stronger support mechanism for marine energy in Wales.

Ministerial Policy Statement
on Marine Energy – July 2009

Welsh Government Business
and Financial Support

Marine Energy
Infrastructure Study

Leading the way to smart living

Emissions from buildings in the domestic and public sectors alone account for over a quarter of total Welsh greenhouse gas emissions. The energy performance of buildings is therefore a major global focus for government, industry and academia as energy performance is absolutely crucial in both tackling fuel poverty and delivering a low carbon future. It is also a major market opportunity.

To grasp this opportunity it is vital that the development of smart buildings is linked with the development of infrastructure, including smart grid and broadband, to support and fully exploit it. Complementing our aim of Wales having the best broadband in Europe by 2020 and providing a first class digital infrastructure that is a key feature of *Delivering a Digital Wales*, we will look at how infrastructure and buildings can combine to deliver smart living for Wales.

Delivering a Digital Wales

Where we are now

Wales has major infrastructure assets that make our nation an attractive destination for investment and development. Wales also has a strong, highly-competitive energy performance industry comprising an excellent SME base. We are also at the forefront of innovation, research and development in this field.

To date, we have invested £3m into the establishment of the £6.4m Sustainable Building Envelope Centre – a Tata, Low Carbon Research Institute and Welsh Government funded venture in Shotton. This includes £1.8m of Structural Funds to design, model, test, prototype and monitor low carbon building systems using integrated thermal and photovoltaic technologies. The Welsh Government have also invested £2m into SPECIFIC – an innovation and technology centre in Port Talbot intended to accelerate academic research in functional coatings through to industrial scalability – in addition to the £10million funding over 5 years from the Engineering and Physical Sciences Research Council (EPSRC) and Technology Strategy Board (TSB).

Where we want to be

Along with ensuring we have the wider energy infrastructure to match our ambitions, we want to ensure that Wales is at the centre of the development, piloting and rolling out of next-generation smart living solutions.

Building technologies allied with the development of smart-grid technology will be key to Wales' future prosperity and future-proof Wales' energy system against external shocks. They will also enable us to make the most of our indigenous energy sources – renewable and low carbon – and enable us to generate wealth from exporting cutting-edge products and services, knowledge and expertise as well as supporting the export of energy.

Key things we will do in this Government term

- Forge world-class links between academia and industry to ensure that Wales derives maximum benefit from the work of the Low Carbon Research Institute and wider innovative research and development.
- Provide support for research and development to bridge the gap between innovation and commercialisation.

- Work with leading edge developers and research organisations to pilot a major smart-living project in Wales.
- Use Government and public sector procurement to help support the commercialisation of low carbon innovation and aim for the public sector estate to be an exemplar along the lines of the new Gelligaer school.
- Make energy a key priority within our future smart cities work.

Appendix – web links to Welsh Government documents

1. Programme for Government 2011-2016
www.wales.gov.uk
2. Economic Renewal: A New Direction, July 2010
www.wales.gov.uk/business
3. Economic Renewal - Sectors
www.wales.gov.uk/business
4. One Wales: One Planet – The Sustainable Development Scheme of the Welsh Government – May 2009
www.wales.gov.uk/sustainabledevelopment
5. Sustaining a Living Wales
www.wales.gov.uk/livingwales
6. Climate Change Strategy for Wales – October 2010
www.wales.gov.uk/climatechange
7. National Energy Efficiency and Savings Plan – March 2011
www.wales.gov.uk/energy
8. Understanding Wales’ Future – January 2012
www.wales.gov.uk/research
9. Fuel Poverty Strategy – 2010
www.wales.gov.uk/energy
10. Towards Zero Waste: The Overarching Waste Strategy Document for Wales – June 2010
www.wales.gov.uk/waste
11. Planning Policy Wales
www.wales.gov.uk/planning
12. Technical Advice Note 8: Planning for Renewable Energy
www.wales.gov.uk/planning
13. Review of Planning and Consenting Process
www.wales.gov.uk/news
14. Practice Guidance: Planning for Renewable and Low Carbon Energy – A Toolkit for Planners
www.wales.gov.uk/planning
15. Consultation on a Single Environmental Body – Natural Resources Wales
www.wales.gov.uk/livingwales
16. A Living Wales – Consultation on Sustaining a Living Wales
www.wales.gov.uk/livingwales
17. Silk Commission – Statement by the First Minister for Wales
www.wales.gov.uk/firstminister
18. Economic impact of low carbon energy on Welsh ports
www.wales.gov.uk/research
19. First Minister’s Written Statement on Energy
www.wales.gov.uk/firstminister

20. Energy & Environment Sector
www.wales.gov.uk/business
21. A Low Carbon Revolution – The Welsh Assembly Government Energy Policy Statement – March 2010
www.wales.gov.uk/energy
22. Keeping it local: maximising the Welsh £
www.wales.gov.uk/housing
23. SME friendly procurement: The Can Do Toolkit 2
wales.gov.uk/topics/housingandcommunity/housing/publications/smecando/?lang=en
24. For Our Future: The 21st Century Higher Education Strategy and Plan for Wales
www.wales.gov.uk/educationandskills
25. The National Science Academy
www.wales.gov.uk/educationandskills
26. Skills Growth Wales
www.wales.gov.uk/news
27. Jobs Growth Wales
www.wales.gov.uk/educationandskills
28. Ynni'r Fro Programme
www.energysavingtrust.org.uk
29. Welsh Government Business and Financial Support
www.business.wales.gov.uk/
30. Arbed – Strategic energy performance investment programme
www.wales.gov.uk/energy
31. Nest
www.wales.gov.uk/news
32. Skills That Work for Wales
www.wales.gov.uk/educationandskills
33. Severn Embryonic Technologies Scheme
www.wales.gov.uk/energy
34. Low Carbon Research Institute
www.lcri.org.uk
35. SEACAMS
www.seacams.ac.uk
36. Ministerial Policy Statement on Marine Energy – July 2009
www.wales.gov.uk/environment
37. Marine Renewable Energy Strategic Framework
www.mresf.rpsgroup.com
38. Marine Energy Infrastructure Study
www.marineenergypembrokeshire.co.uk
39. Delivering a Digital Wales
www.wales.gov.uk/business